

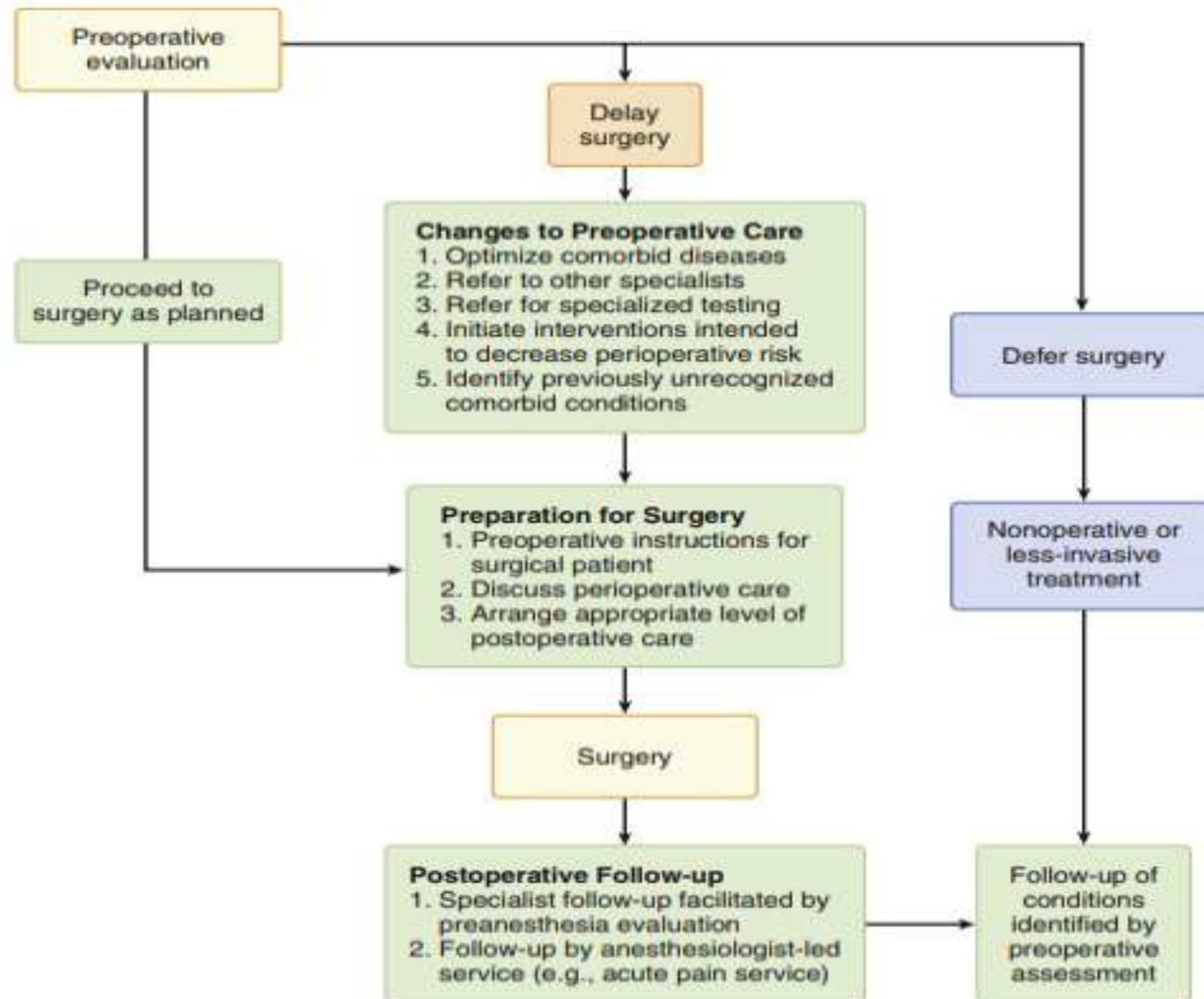
بہ نام خدائی کہ در این مرد  
سے کیا

# PERIOPERATIVE ANESTHESIA

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- The anesthesia preoperative evaluation, which is the clinical foundation for guiding perioperative patient management, reduces perioperative morbidity and enhances patient outcome.

- . The fundamental purpose of preoperative evaluation is to obtain pertinent
- information regarding the patient's medical history, formulate an assessment
- of the patient's perioperative risk, and develop a plan for any requisite clinical
- optimization.



**TABLE 38-1 METABOLIC EQUIVALENTS OF FUNCTIONAL CAPACITY**

METs	Equivalent Level of Exercise
1	Eating, working at computer, or dressing
2	Walking down stairs, walking in your house, or cooking
3	Walking one or two blocks on level ground
4	Raking leaves or gardening
5	Climbing one flight of stairs, dancing, or bicycling
6	Playing golf or carrying clubs
7	Playing singles tennis
8	Rapidly climbing stairs or slowly jogging
9	Jumping rope slowly or cycling moderately
10	Swimming quickly, running, or jogging briskly
11	Skiing cross country or playing full court basketball
12	Running rapidly for moderate to long distances

### Step 1: Emergency Surgery

Proceed to surgery with medical risk reduction and perioperative surveillance

### Step 2: Active Cardiac Conditions

- Unstable coronary syndromes (unstable or severe angina, recent MI)
- Decompensated HF (new onset, NYHA class IV)
- Significant arrhythmias (Mobitz II or third-degree heart block, SVT or AF with rapid ventricular rate, symptomatic ventricular arrhythmia or bradycardia, new VT)
- Severe valvular disease (severe AS or MS)

Postpone surgery until stabilized or corrected

### Step 3: Low-Risk Surgery (risk < 1%)

- Superficial or endoscopic
- Cataract or breast
- Ambulatory

Proceed to surgery

### Step 4: Functional Capacity

- Good:  $\geq 4$  METs (can walk flight of stairs without symptoms)

Proceed to surgery

### Step 5: Clinical Predictors

- Ischemic heart disease
- Compensated or prior HF
- Cerebrovascular disease (stroke, TIA)
- Diabetes mellitus
- Renal insufficiency

No clinical predictors

Proceed to surgery

1-2 clinical predictors

Vascular surgery

Intermediate-risk surgery

Proceed to surgery with HR control or consider noninvasive testing if it will change management

$\geq 3$  clinical predictors

Vascular surgery

Consider testing if it will change management



**TABLE 38-3 REVISED CARDIAC RISK INDEX  
COMPONENTS AND EXPECTED CARDIAC RISK**

Components of Revised Cardiac Risk Index*	Points Assigned
High-risk surgery (intraperitoneal, intrathoracic, or suprainguinal vascular procedure)	1
Ischemic heart disease (by any diagnostic criteria)	1
History of congestive heart failure	1
History of cerebrovascular disease	1
Diabetes mellitus requiring insulin	1
Creatinine >2.0 mg/dL (176 $\mu$ mol/L)	1
Revised Cardiac Risk Index Score	Risk of Major Cardiac Events††
0	0.4%
1	1.0%
2	2.4%
≥3	5.4%

## **BOX 38-2** *Recommendations for Preoperative Resting 12-Lead Electrocardiogram*

### **CLASS I RECOMMENDATION: PROCEDURE SHOULD BE PERFORMED**

Preoperative resting 12-lead ECG is recommended for patients with one or more clinical risk factors\* who are undergoing vascular surgical procedures.

Preoperative resting 12-lead ECG is recommended for patients with known CAD, PAD, or CVD who are undergoing intermediate-risk surgical procedures.

### **CLASS IIa RECOMMENDATION: IT IS REASONABLE TO PERFORM THE PROCEDURE**

Preoperative resting 12-lead ECG is reasonable in persons with no clinical risk factors who are undergoing vascular surgical procedures.

### **CLASS IIb RECOMMENDATION: THE PROCEDURE MAY BE CONSIDERED**

Preoperative resting 12-lead ECG may be reasonable in patients with one or more clinical risk factors who are undergoing intermediate-risk operative procedures.

### **CLASS III RECOMMENDATION: THE PROCEDURE SHOULD NOT BE PERFORMED BECAUSE IT IS NOT HELPFUL**

Preoperative and postoperative resting 12-lead ECGs are not indicated in asymptomatic persons undergoing low-risk surgical procedures.

## **BOX 38-8** *Indications for a Pacemaker*

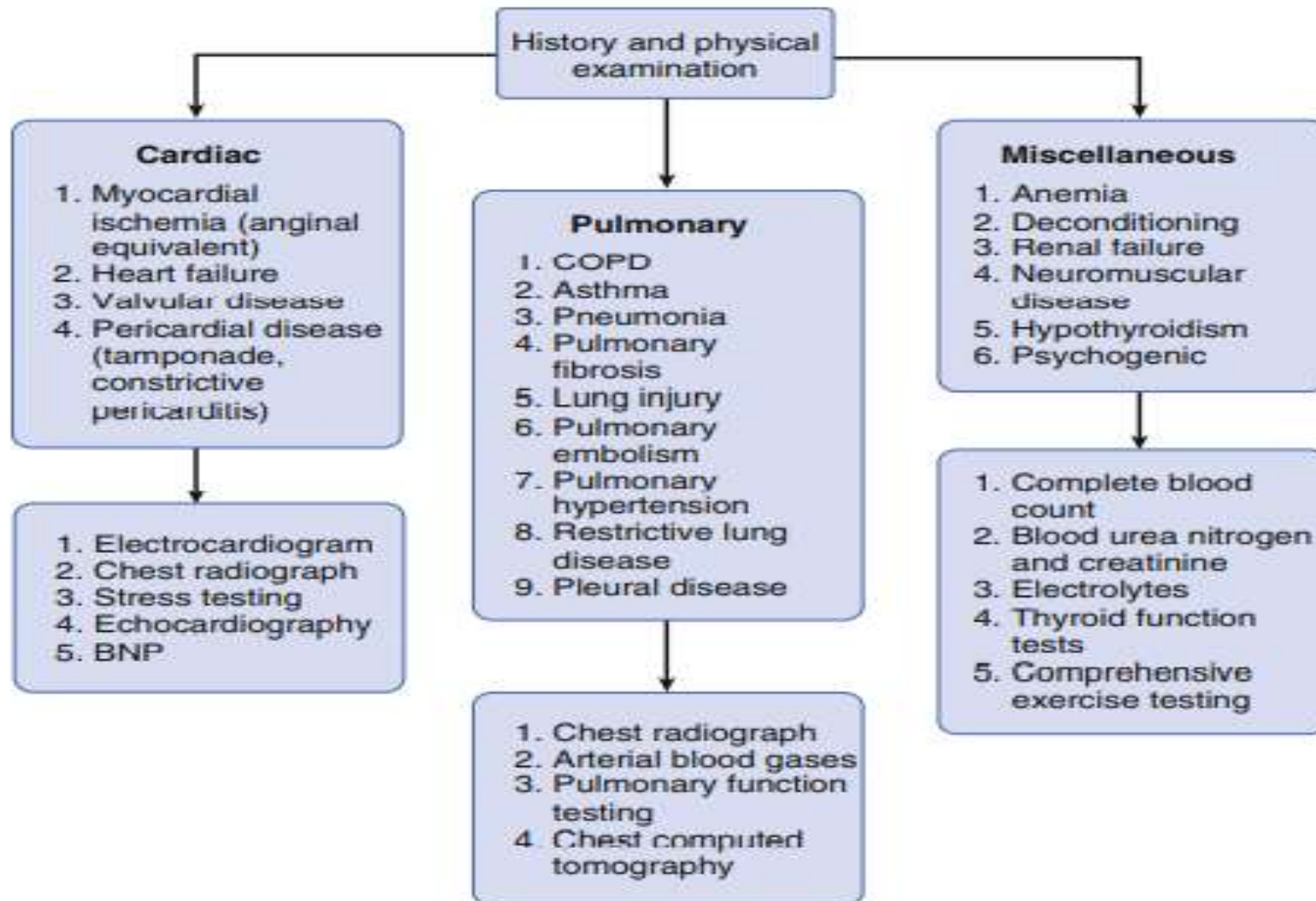
### **CLASS I INDICATIONS\***

- Sinus bradycardia with symptoms clearly related to the bradycardia (usually with a heart rate  $<40$  beats/minute or frequent sinus pauses)
- Symptomatic chronotropic incompetence
- Complete (third-degree) AV block†
- Advanced second-degree AV block (block of  $>2$  consecutive P waves)
- Symptomatic Mobitz I or II second-degree AV block
- Mobitz II second-degree AV block with a widened QRS complex or chronic bifascicular block, regardless of symptoms

### **CLASS 2 INDICATIONS‡**

- Sinus bradycardia (heart rate  $<40$  beats/minute) with symptoms suggestive of bradycardia but without a clear association between bradycardia and symptoms
- Sinus node dysfunction with unexplained syncope
- Chronic heart rates  $<30$  beats/minute in an awake patient

# HISTORY OF DISPNEA



## **BOX 38-12** *Risk Factors for Postoperative Pulmonary Complications*

### **PATIENT-RELATED**

- Age  $\geq 60$  yr
- ASA-PS class  $\geq 2$
- Heart failure
- Partial or total functional dependence
- Chronic obstructive pulmonary disease
- Weight loss
- Delirium
- Cigarette smoking
- Alcohol use
- Abnormal chest examination findings

### **PROCEDURE-RELATED**

- Thoracic surgery
- Abdominal surgery
- Neurosurgery
- Head and neck surgery
- Emergency surgery
- Vascular surgery
- Use of general anesthesia
- Blood product transfusion

### **LABORATORY TEST-RELATED**

- Albumin level  $< 35$  g/L
- Abnormal chest radiograph
- BUN level  $> 7.5$  mmol/L ( $> 21$  mg/dL)



**TABLE 38-12 FRAMEWORK FOR PREOPERATIVE DIAGNOSTIC TESTING BASED ON PATIENTS' MEDICAL HISTORY**

Preoperative Diagnosis	ECG	Chest Radiograph	Hct/Hb	CBC	Electrolytes	Creatinine	Glucose	Coagulation	LFTs	Drug Levels	Ca
<b>Cardiac disease</b>											
History of MI	X			X	±						
Chronic stable angina	X			X	±						
CHF	X	±									
HTN	X	±			X*	X					
Chronic atrial fibrillation	X									X†	
PAD	X										
Valvular heart disease	X	±									
<b>Pulmonary disease</b>											
COPD	X	±		X						X‡	
Asthma	(PFTs only if symptomatic; otherwise no tests required)										
Diabetes	X				±	X	X				
<b>Liver disease</b>											
Infectious hepatitis								X	X		
Alcohol or drug induced hepatitis								X	X		
Tumor infiltration								X	X		
Renal disease			X		X	X					
Hematologic disorders				X							
Coagulopathies				X				X			
<b>CNS disorders</b>											
Stroke	X			X	X		X			X	
Seizures	X			X	X		X			X	
Tumor	X			X							
Vascular disorders or aneurysms	X		X								
<b>Malignant disease</b>				X							
Hyperthyroidism	X		X		X						X
Hypothyroidism	X		X		X						
Cushing disease				X	X		X				
Addison disease				X	X		X				
Hyperparathyroidism	X		X		X						X
Hypoparathyroidism	X				X						X
Morbid obesity	X	±					X				
Malabsorption or poor nutrition	X			X	X	X	X				
<b>Select drug therapies</b>											
Digoxin (digitalis)	X				±					X	

**Table 68–2** Operative procedures suitable for ambulatory surgery

Specialty	Types of Procedures
Dental	Extraction, restoration, facial fractures
Dermatology	Excision of skin lesions
General	Biopsy, endoscopy, excision of masses, hemorrhoidectomy, herniorrhaphy, laparoscopic procedures, varicose vein surgery
Gynecology	Cone biopsy, dilatation and curettage, hysteroscopy, laparoscopy, polypectomy, tubal ligation, vaginal hysterectomy
Ophthalmology	Cataract extraction, chalazion excision, nasolacrimal duct probing, strabismus repair, tonometry
Orthopedic	Anterior cruciate repair, arthroscopy, bunionectomy, carpal tunnel release, closed reduction, hardware removal, manipulation under anesthesia
Otolaryngology	Adenoidectomy, laryngoscopy, mastoidectomy, myringotomy, polypectomy, rhinoplasty, tonsillectomy, tympanoplasty
Pain clinic	Chemical sympathectomy, epidural injection, nerve blocks
Plastic surgery	Basal cell cancer excision, cleft lip repair, liposuction, mammoplasty, otoplasty, scar revision, septorhinoplasty, skin graft
Urology	Bladder surgery, circumcision, cystoscopy, lithotripsy, orchiectomy, prostate biopsy, vasovasostomy

### 3-4 Laboratory test recommendations for outpatients scheduled to undergo ambulatory surgery under general anesthesia

Age	Men	Women
	None	Pregnancy test*
	Electrocardiogram	Hematocrit level, pregnancy test*
	Electrocardiogram	Hemoglobin or hematocrit level, electrocardiogram
	Hemoglobin or hematocrit level, electrocardiogram, serum urea nitrogen, glucose	Hemoglobin or hematocrit level, electrocardiogram, serum urea nitrogen, glucose
	Hemoglobin or hematocrit level, electrocardiogram, serum urea nitrogen, chest radiograph†	Hemoglobin or hematocrit level, electrocardiogram, serum urea nitrogen, chest radiograph†

